**Details for Sessions**

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| **Plenary 1 – ‘Fraction’ is not a four letter word (1.0 h) Shelley**  *The purpose of this plenary is to provide a K-12 context for the discussion of fractions. It will include references to a variety of data indicated the need for further support for teaching and learning fractions as well as provide an introduction to the KNAER project/artefacts (brief).*  **Key Messages:**   * Why Fractions? (difficult to teach, difficult to learn, foundation for subsequent learning) * What is the current reality? (EQAO, teacher anecdotal information, student achievement, CMP) * What are ‘fractions’?   (meanings, uses, curriculum links – general)   * Intro to KNAER (grounded in research and in classrooms) * classroom dynamics | **Breakout 1 – Different Ways of Thinking of Fractions (1.5 h)**  **Myth:** All fractions represent a part-to-whole relationship.  **Key Messages:**  *The purpose of this breakout is to establish a common understanding of the various potential interpretations of a fraction and the respective connections to the curriculum.*   * Sticky note activity – meaning of fractions (PL on KNAER wiki) * Fraction one-pager -- different ways to think about fractions e.g., part to whole sets, models (Math for Teaching on KNAER wiki) * What are you questions/concerns about fractions? What do your students struggle with? What do you struggle with (efficacy)? * Connecting to the different meanings (Distinction between operator and part of whole in not real in early grades) * Connecting to the other strands (and content areas) * Connect to big ideas (about fractions or about the ‘processes’ for the sessions – e.g., LD, assessment – undecided about this) | **Other Points**  **Plenary:**   * Position KNAER as a prototypical knowledge mobilization project and let people know that a Measurement km project is underway * We are figuring out how to blend use of existing resources   **Breakouts:**   * Different meanings of fractions (connect to specialized content knowledge) * All fractions are ratios – True? False? * How do we justify why we want kids to classify whether a fraction is one meaning or another?   \*\*also samples from EQAO  Teacher efficacy could include some myths on it |
| **Plenary 2 – Reasons a Student may Struggle (1.75 h) Marian**  *The purpose of this plenary is to allow participants to deepen their understanding of fractions (Specialized Content Knowledge) by examining common student struggles within the context of the curriculum and through student samples.*  **Key Messages:**   * For each grade, what we want students to do vs. what we want them to know * Where do students struggle, why do they struggle * The importance of context and the importance of clarity (i.e., state that it is an area model, or ask kids to state what model or context) * Value of conceptual understanding vs. procedural skill   KNAER examples | **Breakout 2 – Examining Student Responses (2.0 h)**  **Myth:** If a student can write it, they conceptually understand it.  **Key Messages:**  *In this breakout, participants will explore student responses from a variety of media with a focus on an asset model.*   * Further consideration of specific examples identified by Marian and not addressed in the plenary * Start by analyzing student work through “asset model” begin with what does understanding about fractions * Recognize common patterns in student thinking * Populate the Supporting Student Learning chart (what students know, what they may be struggling with, what questions can be asked – on KNAER wiki under Representing, also Comparing) * How do you know what is good and what is bad helps you with consolidation * Use of precise diagnostics (don’t force kids to do more on things they already know); how do Gap Closing diagnostics focus on student misconceptions * create/identify activities that would help teachers ensure that these misconceptions aren’t created through instruction * Grade/division specific content examples and resources (e.g., ePractice, Gap Closing)   KNAER examples | **Other Points**  **Plenary:**  **Breakouts:**   * **K-4**: distinction between operator and part of whole in not real in early grades * **4-8, 9-12**: There is a significant difference in clarifying why 1 ÷ 3 = 1/3 and 2÷3 = 2/3; connections to decimals/percents; different types of adding questions (Judy’s sheet on CAMPPP wiki) * How can you manage/arrange examining student responses with other teachers when you are back at the ranch? |
| **Plenary 3A – Supporting Students with Learning Disabilities (1.25 h) Connie and Ruth**  *The purpose of these plenaries is to increase empathy for students with learning disabilities by developing an understanding of cognitive processes. This will lead to current thinking about the implications and strategies for refining instruction and assessment decisions to increase student success.*  **Key Messages:**   * Brief summary of brain research * summary of research from our project * sensitivity training empathy (the 4 cognitive processes plus executive functioning in plenary, to lay the foundation for work in breakout) * implications for instruction and assessment (chart to capture early thoughts); precision and personalization; connection to what we already know about effective mathematics instruction and assessment * how we might use this new information to shift instruction | n/a | **Other Points**  **Plenary**   * how does a reference in the curriculum to ‘using a variety of tools’ affect a student with a specific LD; how do we support them properly |
| **Plenary 3B – Supporting students with Learning Disabilities continued (1.5 h) Connie and Ruth**  **Key Messages:**   * continue with sensitivity training in this plenary and leave the adjustments / refinements for breakout * classroom dynamics allows for addressing each students’ needs | **Breakout 3 – Programming for Students with LD (2.0 h)**  **Myth:** Some students just can’t do the math (math gene).  **Key Messages:**  *In this session, participants will have an opportunity to consider another learning disability from the perspective of the student, explore the grade specific impact of learning disabilities, and consider resources with this new understanding as a lens.*   * Examining existing resources: pick a lesson and identify what the lesson has that would support a student with a strength / deficit in this cognitive process + executive functioning, and refine accordingly; IEP to math specific accommodations to refinements / adaptations of lessons * Overlay the new awareness on a resource (e.g., adaptations of lessons, questions; or examine the strengths of CLIPS, Gap Closing: etc.) * Different lenses for each breakout (K-4: watch and wonder; 4-8: plan based on information…) |
| **Plenary 4 – Questioning, listening and responding to elicit/promote students’ mathematical thinking (1.5 h) Chris**  *In this plenary, the focus will be on the use of questioning and listening will highlight the importance of asking questions that elicit students’ mathematical thinking and listening and responding to that thinking with appropriate feedback.*  **Key Messages:**   * Questioning &listening to student responses   + Look at questions that don’t and do get at student thinking   + Discussion of the difference between evaluative and interpretive listening (and questioning) to promote listening that promotes and listens to student thinking rather than judging correctness   + Focus on student-student questioning and developing the ability of students to be asking one another questions during and about their work; developing networks (beyond teacher-student) * Feedback – what is descriptive feedback?   + Look at examples of descriptive feedback that really help student develop the ability to understand next steps and see the value of their work; ask students to reflect on their work and have discussions about their work   + Not only written – oral feedback, conversations rather than just comments * To reflect and provide feedback and questions about both mathematical content and processes * Continual revision of planning is necessary * *CKT-M needed* * *Assessing student understanding asset vs. deficit* * *Some assessment needs to be “in the moment”* * Based on demonstrated student knowledge, teacher uses current knowledge bank to shift instruction * Share the descriptive feedback framework * Examine the interconnectedness of feedback with the learning goals/success criteria | **Breakout 4A –** Tasks that get to students’ mathematical thinking; learning goals; questioning and listening **(1.75 h)**  **Myth:** Learning goals must be stated at the beginning of the lesson.  **Key Messages:**  *In this breakout participants can begin to use their increased awareness of the specialized content knowledge of fractions along with empathy for students’ needs to consider how they can build more purposeful assessment for learning opportunities into their instruction.*   * What types of learning tasks enable teachers to “listen” (observe & converse) to student thinking and ask Q’s to probe * Math talk learning communities (video); provide and develop question prompts that students ask one another * Shift in philosophy regarding how students learn (Research Informed Instruction for representing, comparing, ordering fractions on KNAER wiki); current reality [the teacher should…because it allows students to…] * What learning goals are/how to use them (model learning goals in previous breakouts, discuss them here) * Classroom dynamics | **Other Points**  **Plenary**   * Connecting categories of achievement and math processes * Current reality – based on OAME sessions, research, anecdotal information * Some can be pre-planned using e.g., IEP and diagnostics * Structuring professional learning for teachers based on the feedback framework   **Breakouts**   * We need to enable students w/LD to show what they know/can do * This includes checking for understanding * CLIPS ePractice * Responding to student thinking   + in the moment   + over time (cont’d from CAMPPP 2011) * Success criteria (need to be posted – but when and in what form?) * Using diverse/various assessment strategies * Use of more open questions to find out what students know * Teacher doesn’t have to teach everything to meet the expectations (use of diagnostic) * I have given the diagnostic – then what? * Triangulation of data (observations, conversations & products) * Using Gap Closing diagnostics to see breadth of what you would want to find out |
| **Breakout 4B – Practicing Descriptive Feedback (1.75 h)**  **Myth:** <<need a myth>>  **Key Messages:**  *This breakout will allow teachers to enhance their descriptive feedback while considering its role in their instruction and assessment practices.*   * Examining student work and developing descriptive feedback * [Populating the Supporting Student Learning chart with questions and descriptive feedback statements or * Annotated student work] * Pushing beyond ‘unit’ thinking – making connections across content and through processes   Thinking about the content and process expectations for fractions to assist with descriptive feedback (should we look at big ideas as well?) |
| **Plenary 5 – Assessment of Student Learning (1.5 h) Chris**  **Assessment of student learning and putting it all together**  **Summative assessment as continuous assessment**  *This plenary will engage participants in looking at summative assessment as a process rather than an event. This will be developed through examination of balanced assessment planning which accounts for assessment for learning and assessment of learning over time. As well, they will have an appreciation for the role their increased specialized content knowledge for teaching fractions will play in more meaningful assessment and instruction.*  **Key Messages:**   * what is the lens for evaluating student achievement * assessment (including summative) as an iterative process * ways of thinking about summative assessment as a continuous process – portfolios, learning walls, etc. * new ways of thinking about design down (have a plan and adjust as you go) * AoL can be considered a point on a trajectory rather than an endpoint; doesn’t need to be at the end of the unit * Linking in a meaningful manner AfL with AoL and reporting | **Breakout 5 – Balancing Assessment (1.5 h)**  **Could model after Leadership**  **Myth:** Two students who demonstrate the same understanding at the end of the unit would have the same mark assigned, regardless of their achievement on AfL tasks throughout the unit {are we measuring learning (how much over time) or achievement (understanding at a point in time)}.  Although I have gathered evidence over time about my students, my final mark is based on what they know at the end of the term/year.  **Key Messages:**  *This breakout will allow teachers to explicitly link success criteria, learning goals, and descriptive feedback. Emphasis is on Assessment of learning as a continuous process rather than a single (or dual) task. Consideration of reporting will be included as well.*   * how does the AfL inform the AoL * what counts; what are we evaluating; what does evaluation really mean * If kids don’t do well by the end of the unit, the teacher needs to reflect and perhaps learn something to address that in subsequent grades * Counting what counts…in secondary vs elementary * Learning Walls – on the wall for their breakout; for classrooms with respect to fractions * Portfolios designed around key ideas on learning walls; process expectations; key assessment questions * Connection between the learning wall and summative assessment would need to be made explicit by the breakout facilitators (could ask the participants to identify the connection between the summative—the balanced—the plan and putting those pieces together) | **Other Points**  **Plenary**   * need learning goals (and big ideas?) to do this   **Breakouts**   * summative teaching vs. summative assessment * are individual kids on track to get where I want them to get to; how do I record this information |
| **Plenary 6 – Lessons Learned from Our Research in Ontario Classrooms (1.25 h) Cathy and Shelley**  *Linking research with the findings of the classroom teachers from the KNAER project, a number of potential shifts in instruction will be examined. For example, there is an over reliance on circle representations in the teaching resources available. Participants will be exposed to further specialized content knowledge as well as professional learning conversations which led to this thinking.*  **Key Messages**  **What we did:**   * Working together (CAR) * slowing down the teaching is good for everyone * dipping in and out of fractions approach * selecting and using particular methods to check understanding and monitor student understanding across grades/strands   **What we are learning:**   * We know for sure that students are using circle representations even when it doesn’t make sense mathematically or contextually. * That fractions is an enormously difficult area to teach partly because it is incredibly difficult to learn (misconceptions of students) * Certain representations seem to be underutilized even though they appear to be helpful to students. Linear models for representing fractions have an important place in Ontario classrooms – when and how does it help kids (discrete, linear, area models) | **Breakout 6 – Connecting our Learning (2.0 h)**  **Myth:** All representations are equal in communicating mathematical understanding.  **Key Messages:**  *Participants will examine the use of the number line in all grades as well as consider the strengths/challenges inherent in the different models (driving at the need to support students in developing flexibility with model selection).*   * Activity using a number line (all breakouts) – comparing efficiency of models (we have 5 scenarios from Kerry McDonald which can be utilized); flexibility to make connections between models; connect back to descriptive feedback and learning goals (CLIPS shows three models simultaneously) [JVdW—math isn’t in the model] * Other ‘what we know for sure’ pieces * The conscious planning of talk time for students vs for teachers (could have a timer at CAMPPP which measures each – show proportion of time)   K (5 Bakery – parts of a set) | **Other Points**  **Plenary**   * Allow students and teachers to explore and develop their own conceptual understanding * Is use of number lines the most important of the potential “what we know for sure” ideas?   **Breakouts**   * Hops tool from CLIPS * Every model is useful in a different situation * Purpose/use of different representations * I can still be teaching effectively when I am not speaking * Secondary: meeting the needs of your students (rather than stating students are in the wrong pathway) |

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| **Plenary 7 – Our best thinking at this point in time about…professional learning models (1.5 h) Cathy (and Shelley)**  *Participants will consider some more mathematics content related to Fractions with a focus on the variety of professional learning models employed to engage the teachers in reflective discourse/action research.*  **Key Messages**   * Characteristics of high quality professional learning * One pager with different models outlined (maybe from PLMLC, also Leadership Branch memo for administrators and other artefacts) (looks like/doesn’t look like; analysis of different models) * Why is this important? More mathematics content, agency, and sustainability (professional learning artefacts including Janice et al re: slowing it down) * Tips and Tricks – practices we have observed that help people avoid the pitfalls and myths. | **Breakout 7A – Building High Quality Teacher Discourse (1.25 h)**  **Myth:** I only need to know about the content of the grade/course(s) I teach.  **Key Messages:**  *There will be 15 minutes to distribute post cards and feedback forms and then 15 minutes to prepare for the sharing of the learning wall. Participants will move to the breakout room they start in for the ‘walkabout’ through the breakouts. 15 minutes in each breakout will allow for the guide to share an overview and for visitors to post descriptive feedback.*   * Understanding Mathematics connections K-12 enhances a teacher’s ability to plan, instruct and assess students | **Other Points**  **Plenary**   * Detailed careful planning is not optional   + Content   + Strategies   + Dynamics   + Trajectories   **Breakouts**   * Importance of affective domain – self-belief, comfort, … |
| **Breakout 7B – Feedback and Feed Forward (1.5 h)**  **Myth:** You can’t do any work without the board supporting you with money and time.  **Key Messages:**   * integrating the feedback on the learning wall (how does this increase your understanding – how would this practice of editing/revising work increase student understanding?) * carrying it forward – what does this look like back at your place * Thanks to the Breakout Facilitators |

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| **Plenary 8 – Acting Strategically: Examining our Current Reality (1.5 h) Myrna and Shirley**  *The work of this week will be contextualized across the levels of the Instructional Prism with a focus on a variety of evidence and professional learning models.*  **Key Messages**   * types of evidence and alignment * moderating (Jim Knight) * Assessment for Teacher Learning * For students, parents, teachers |  |  |

**Other Thoughts/Ideas**

**Sparks from Classrooms**

Spark (a max five minute intro to an idea/practice)

For Further Discussion in a Chat Rooms: The Cottage Room; semi-circular deck by Mardon; fireplace on second story of Bayview

Video of Sparking the Fire could be posted on EduGAINS; flip camera discussion of the groups **(two people)**

Camp Songs….It only takes a spark to get a fire going…

People could bring samples of student work (portfolios, etc)

Ideas:

* Poll everywhere with a cell phone
* Using a tablet to collect/collate student achievement data (including photos, videos, anecdotal notes)
* On-going wiki word wall or a learning wall
* Systems for recording assessment data for students (Rainbow – used red/green/orange dots to record student progress relative to learning goals)
* KPR teaching in ‘chunks’ rather than units (learning in context/ over time/ increased precision in instruction/ purposeful/ strategic/ aligned)

\*\* Trish has data for LD student – could be a sparkler – could link to big picture of the LD data for Gap Closing

**Learning Walls**

**(two people)**

In the plenary – a professional learning wall (fields that speak to each of the key learning) – electronic version to support AC participants

In the breakouts – a student learning wall which grows through the week (see sample on KNAER wiki for representing fractions)

**Math Trail** – asynchronous with winners announced on Friday (Judy creating this)

**Link back to the Important Book**

– have them create a page for each day

**Other:**

At March planning session:

* Judy could give an overview of the resources that are available
* need to clarify learning goals (what do we mean by that term)
* Identify sparklers and other lead individuals